REMARKS

1) Claims 7-9 and 17-19 were rejected under 35 USC 112, second paragraph, for the recitation of the "fifth term".

2) Claims 7 and 17 are amended to clarify the recitation. Claims 7 and 17 are further amended in independent form including all the limitations of the base claims 1 and 11.

3) Claims 1-6, 10-16 and 20 were rejected by the Office under 35 USC 103(a) as being anticipated by Kuenen et al.

4) Claims 1 and 11 are amended to recite that the incoming signal is on-line. This amendment is supported several places in the original text and drawings including the summary on page 3, line 5, "computing correction coefficients for I and Q signals of an on-line operational incoming signal . . . ".

5) Kuenen shows an adaptive algorithm using feedback for computing correction coefficients from a test incoming signal. [Switches 118 and 119 or 518 and 519 are opened for calibration in paragraph 0022 and 0048 and FDIQC source 510 test signal is used for calibration in paragraph 0044]. The present invention of amended claims 1 and 11 differs from Kuenen by using an on-line incoming signal for computing correction coefficients and using packet-fixed correction coefficients. The limitations of the test signal technique of Kuenen were known and described by the Applicant in the third paragraph of the background of the invention in the original specification.

> "In one method, an offline test signal is used during manufacture or installation to align the I/Q gain to unity and the I/Q phase to 90° in the signal receiver. However, the performance of the receivers using the

> test signal method is limited by drift in the analog circuitry after the alignment. This limitation is reduced by performing the alignment periodically during operation. However, the periodic alignment adds overhead that reduces the efficiency of a signal communication channel."

The advantages of the on-line operation technique of the present invention with respect to the test signal method were known and described by the Applicant in the third paragraph of the summary of the original specification.

> "Advantages of the present invention are that no test signal is required, no communication overhead is added, and the correction coefficients are determined without degrading BER during the determination time period."

6) One could argue that Kuenen could compute and apply his correction coefficients with an on-line incoming signal (which he does not do). However, in that case Kuenen's corrections are adapting (not fixed) at the same time the corrections are being applied. The present invention is clear that the correction coefficients are fixed for the packets that they are applied to. The limitations of adapting the correction coefficients while they are being applied were known and described by the Applicant in the fourth paragraph of the background of the invention in the original specification.

> "A second method uses an adaptive algorithm that processes the I and Q signals for converging to adjustments to the I and Q signals while the receiver is on-line. However, the BER performance of the receivers using the adaptive algorithm method is degraded because the receiver is estimating the transmitted data during the same on-line time period that the adaptive algorithm is converging. Of course, the adaptive algorithm could be performed on a test signal but this would add overhead and reduce signal efficiency."

7) One could argue that Kuenen's correction coefficients are fixed after the adaptive algorithm has converged. However, in that case the incoming signal that Kuenen uses for

computing the correction coefficients is not the same incoming signal as the incoming signal to which Kuenen applies the correction coefficients. The present invention is clear that the same incoming signal is used for computing and applying the correction coefficients. Kuenen cannot be given credit both ways - same incoming signal and fixed correction coefficients.

8) It should be noted that Kuenen had the benefit of knowing the (test) incoming signal, whereas the present invention was required to use whatever incoming signal happened to be on-line at the time. Significant engineering problems needed to be resolved in order to combine the ideas using on-line signals for computing fixed correction coefficients in a way that gives the best performance. Kuenen did not resolve these engineering problems. Accordingly, the Applicant requests reconsideration and allowance of claims 1-6, 10-16 and 20.

9) Regarding claims 3, 5, 13 and 15, the Applicant has not been able to find in Kuenen the present invention for reducing DC offset of I and Q signals. The 218 provides the feedback error signal for the adaptive algorithms 214 and 215 for converging on frequency dependent imbalances. The Applicant does not see DC offset in Kuenen as a frequency dependent imbalance.

10) The Applicant requests reconsideration of the provisional judicially created obviousness-type double patenting rejection in view of the currently amended claims.

11) The Applicant requests reconsideration and allowance of claims 1-20 as amended.

12) The Examiner is requested to telephone the Applicant's Agent at 650-853-0189 for a conference if such conference could expedite prosecution.

9/29/2004

David R. Gildea date

Reg. No. 38,465